



SecureCore (archived)

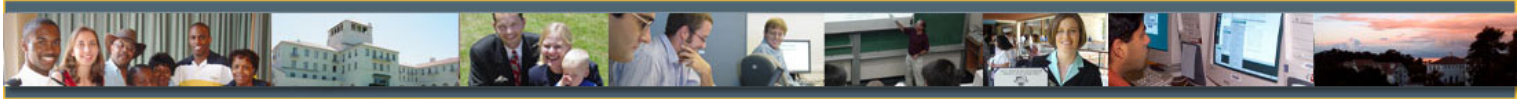
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NAVAL POSTGRADUATE SCHOOL

CENTER FOR INFORMATION SYSTEMS SECURITY STUDIES AND RESEARCH



Research: Projects: SecureCore



SecureCore

Trustworthy Commodity Computing and Communications

The SecureCore project will investigate the fundamental architectural features required for trustworthy operation of mobile computing devices such as smart cards, embedded controllers and hand-held computers. The goal is to provide secure processing and communication features for resource-constrained platforms, without compromise of performance, size, cost or energy consumption. In this environment, the security must also be built-in, transparent and flexible.

A clean-slate design approach, free of previous assumptions and constraints, will be used to integrate support for these features in the *core components* of the mobile platform: the processor hardware, the operating system kernel and the networking interface. The research plan is to: (1) develop a new systematic analysis of mobile computing threats and security requirements, (2) investigate the synergistic design of

new core components, resulting in an integrated SecureCore architecture, and (3) develop experiments and prototypes to demonstrate the effectiveness of the SecureCore.

The significance of this research lies in the exploration of new approaches for threat and requirements analysis, a fresh look at integrated support for security, performance, functionality and usability in mobile platforms, and the potential for innovative advancements in processor instruction set architecture, operating system kernel design, and secure network protocols.

The broader impact of the SecureCore project will be in education and the transfer of foundational knowledge to the public sector. The conceptual and empirical results of the research will be translated into one or more university-level teaching modules. The diversity of our teaching and work environments ensures that the pedagogy developed will have wide applicability and influence. In addition, the SecureCore architecture and integrated security model will be openly available. As a result, new generations of researchers, product developers and educators will be able to more constructively contribute to the advancement of security in Cyberspace.

Organization

SecureCore is a collaboration research project that involves a team from the [NPS](#), [Princeton University](#), and [Information Sciences Institute of the University of California](#)

Sponsors

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Publications

Levin, T. E., Irvine, C. E., Weissman, C., Nguyen, T. D., "Analysis of Three Multilevel Security Architectures" to appear in proceedings of the Computer Security Architecture Workshop, ACM. November 2, 2007, Fairfax, Virginia, USA. ([PDF](#))

Bhaskara, B., Levin, T. E., Nguyen, T. D., Benzel, T. V., Irvine, C. E., Clark, P. C., "Integration of User Specific Hardware for SecureCore Cryptographic Services", NPS Technical Report NPS-CS-06-12, July 2006. ([PDF](#))

Levin, T. E., Irvine, C. E., and Nguyen, T. D., "An Analysis of Three Kernel-based Multilevel Security Architectures", NPS Technical Report NPS-CS-06-001, August 2006. ([PDF](#))

Benzel, T. V., Irvine, C. E., Levin, T. E., Bhaskara, G., Nguyen, T. D., and Clark, P. C., "Design Principles for Security", NPS-CS-05-010, Naval Postgraduate School, September 2005. ([PDF](#)) (Also Available as ISI-TR-605.)

Afinidad, F., Irvine, C.E., Nguyen, T. D., and Levin, T. E., "A Time Interval Memory Protection System", NPS-CS-06-002, Naval Postgraduate School, Monterey, California, November 2005. ([PDF](#))

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Downloads

Poster - SecureCore West 2008 as ([PDF](#)) or ([PPT](#)) or ([Full-sized 24x36 poster](#))

SecureCore NPS Poster 2007 as ([PDF](#)) or ([PPT](#))

Nugget - SecureCore 2007 ([doc](#))

Poster - NSF Cyber Trust Annual Principal Investigator Meeting, January 28-30, 2007, Atlanta, Georgia ([PDF](#)) or ([PPT](#))

Nugget - SecureCore 2005 ([doc](#))

Poster - (SecureCore West) National Science Foundation Poster - CyberTrust meeting, Sept 26, 2005 ([PDF](#))

Poster - (SecureCore East) National Science Foundation Poster - CyberTrust meeting, Sept 26, 2005 ([PDF](#))

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